

# **CLEAN AIR ACT SECTION 112(r) INSPECTION REPORT**

## ***Commonwealth Oil Refining Company, Inc. Penuelas, Puerto Rico***

### **GENERAL INFORMATION**

<b>Stationary Source</b>	Commonwealth Oil Refining Company, Inc.
<b>Date of Inspection</b>	March 10, 2008
<b>USEPA Inspectors</b>	Dwayne Harrington, USEPA – Region II (Edison, NJ) Carlos Rivera, USEPA – Region II, Caribbean Office, Enforcement Jose L. Ayala – RST 2, USEPA – Region II
<b>Contract Auditor</b>	Neil Mulvey, Sullivan Group (Subcontractor)
<b>Description of Activities</b>	<ul style="list-style-type: none"><li>• Opening meeting with facility representative.</li><li>• Program audit.</li><li>• Closing meeting with facility representatives.</li></ul> Program audit consisted of the following activities: <ol style="list-style-type: none"><li>1. Document review.</li><li>2. Field verification.</li><li>3. Personnel interviews</li></ol>

### **STATIONARY SOURCE INFORMATION**

<b>EPA Facility ID #</b>	1000 0016 9435
<b>Date of Latest Submission (used for RMP inspection)</b>	Receipt Date: June 23, 2004 (Re-submission)  Anniversary Date: June 21, 2009
<b>Facility Location</b>	Road 127 KM. 17.3 Penuelas, PR 00624-7501  Tel. (787) 836-1350
<b>Number of Employees</b>	RMP*Submit states 75 employees. Facility management reported that the facility has 85 employees, with 115 resident contractors.

<b>Description of Surrounding Area</b>	The facility is located in an industrial section of Penuelas. The Caribbean Sea borders the facility to the south. Open space borders the facility immediately in all other directions. While there are other industrial businesses in the area, there are no residences in the immediate area.
<b>Participants</b>	<p>Participants included:</p> <p>Dwayne Harrington, USEPA – Region II, Edison, NJ  Carlos Rivera, USEPA – Region II, Caribbean Office  Jose L. Ayala, USEPA Contractor – RST2  Neil P. Mulvey, USEPA Contractor – Sullivan Group  Rolando H. Mendez, Environmental Coordinator, CORCO*  Roberto Gratacos, Senior Vice President, CORCO</p> <p>* Lead representative for CORCO.</p>

## REGISTRATION INFORMATION

<b>Process ID #</b>	53998 – LPG Marine Terminal
<b>Program Level (as reported in RMP)</b>	Program 3
<b>Process Chemicals</b>	Propane @ 3,000,000.00-lbs.
<b>NAICS Code</b>	49319 (Other warehousing and storage)

<b>Process ID #</b>	53997 – LPG – South Tank Farm
<b>Program Level (as reported in RMP)</b>	Program 3
<b>Process Chemicals</b>	Propane @ 3,800,000.00-lbs.
<b>NAICS Code</b>	49319 (Other warehousing and storage)

## GENERAL COMMENTS

The Commonwealth Oil Refining Company, Inc. (CORCO), Penuelas, PR location is a sprawling industrial complex consisting primarily of shutdown petroleum refinery and petrochemical processes. The first refinery unit was started in 1955, with other refinery units started in 1957 and 1959. Petrochemical processes were added in the 1960s. Throughout the 1980s, various unit operations were shutdown.

The facility currently receives, stores, and distributes #6 fuel oil and diesel oil to the Puerto Rico Electric Power Authority (PREPA). The facility also serves as a terminal for gasoline companies. There are no manufacturing or refining activities performed on site.

The RMP-regulated process includes the receipt of LPG or propane from ocean going vessels (at dock #2) and transfer to fixed storage tanks located in the South Tank Farm. From storage, propane is loaded onto bobtail tank trucks at the tank truck loading station. An odorant (ethyl mercaptan) is added to the propane as it is being pumped into a tank truck. Fixed storage includes:

- Two spheres @ 210,000-gals. each
- Twenty bullets @ 30,000-gals each

A single ocean-going vessel may deliver up to 20,000 – 25,000 barrels (840,000 – 1,050,000 gallons) of propane. The facility reported that they receive approximately one ship every three years. It takes approximately 18–24 hours to offload a ship. The transfer line from dock #2 to propane storage is approximately one mile in length and operates at a pressure of 225 PSIG. Facility management reported that operators use portable LEL detectors for leak detection during ship offloading.

A typical bobtail tank truck contains approximately 13,000-gallons of propane and takes approximately 45-minutes to fill. Safety equipment includes automatic shutdown of the tank truck transfer pumps if a proper ground is not established. The line from the transfer pump to the tank truck is equipped with a break-away valve that will automatically close if the line becomes disconnected.

The facility has LEL detectors to provide audible and visual alarms in the event of a propane release. LEL detectors are located as follows:

- Dock #2 – two LEL detectors
- Storage tank area – five LEL detectors
- Tank truck loading area – six LEL detectors

In addition to audible and visual alarms, the LEL detectors at the tank truck loading area will also automatically shutdown the propane transfer pumps at the alarm setpoint.

## **RMP DOCUMENTATION**

### **Management System [40 CFR 68.15] & Registration**

The facility's RMP registration lists the following regarding propane inventory:

- 3,000,000-lbs. @ LPG Marine Terminal
- 3,800,000-lbs. @ LPG South Tank Farm

The South Tank Farm includes inventory from the fixed propane storage tanks. The LPG Marine Terminal accounts for propane inventory in the ocean-going vessel. Inventory in mobile containers should not be counted toward a facility's inventory as long as the motive force is attached to the container (e.g., tank truck inventory is not counted toward a facility's inventory as long as the tank truck remains attached to the truck cab).

CORCO's Senior Vice President has overall responsibility for implementation of the RMP program. CORCO's Environmental Coordinator has day-to-day responsibility for implementation of the RMP program. CORCO management demonstrated a good understanding of the RMP program requirements and generally was able to locate records to support program implementation. There is however no written description of RMP management responsibilities.

Written description of the facility's RMP procedures are contained in a manual entitled "LPG Dock, Storage, and Loading Rack – RMP & PSM Information." (revised January 2007). The manual includes written description and information on each RMP/PSM element.

### **Hazard Assessment [68.20-68.42]**

The facility utilized EPA's RMP Guidance for Propane Storage Facilities Reference Tables and Equations to determine the Worst Case and Alternative Release OCAs. The scenario descriptions and assumptions, parameters input to the models, distance to endpoints, and impacted residential population and environmental receptors were appropriate.

### **Process Safety Information (PSI) [40 CFR 68.65]**

Process operating conditions include:

Operating Temperature:	ambient	
Operating Pressure:	High	250 PSIG @ 110 deg.F
	Low	35 PSIG @ -15 deg.F
Flow Rates:	Marine vessel to facility	500 GPM
	Tank truck loading	1000 GPM
Design Specifications:	Vapor piping	250 PSIG
	Liquid piping	350 PSIG

PSI available for review included:

- MSDS for propane
- Facility layout drawings / block flow diagrams (BFDs)
- List of design codes and standards

There were no P&IDs of the transfer lines, fixed storage tanks, or tank truck loading system available for review.

As documented in a completed Process Safety Management checklist dated October 2006 (revised January 2007), five of the 20 storage bullets are not consistent with NFPA requirements for vessel relief capacities and tank instrumentation. The checklist notes that compliance with the NFPA requirements was scheduled for the third quarter of 2007. These action items remain incomplete.

Other required PSI documents that were not available for review included:

- Electrical classification drawings / documentation
- Relief system design and design basis
- Documentation that existing equipment complies with recognized and generally accepted good engineering practices

#### **Process Hazard Analysis (PHA) [40 CFR 68.67]**

The facility has completed a “Propane Storage Facility – Hazard Review Checklist” (revised October 2005). The Hazard Review Checklist was completed as a team-based review and led by an outside propane expert consultant. The Hazard Review Checklist identified several action items to address as “no” or “partial” responses to checklist questions. Several of the assigned due dates for resolving these items has passed.

#### **Standard Operating Procedures (SOPs) [40 CFR 68.69]**

CORCO has several manuals containing operating procedures, including:

- CORCO LPG Terminal – Operating Manual; final approval March 2007
- CORCO LPG Terminal Emergency Response Manual
- CORCO LPG Hazardous Materials Security Plan
- CORCO LPG Terminal Fire Safety Analysis
- LPG Operations Manual for CORCO (for USCG); dated March 1998

The CORCO LPG Terminal – Operating Manual (final approval March 2007) contains the following:

- General process description
- Propane characteristics / review of physical properties
- List of emergency equipment and monitoring instrumentation
- SOP – Receiving Product from the Dock

- SOP - Loading Rack Operation
- SOP - Mercaptan Injection (1-lb. of ethyl mercaptan/10,000-gals. LPG loaded)

The facility also has a general description of operating procedures with a list of procedures to be developed, including:

- Identifying Propane Pumps and Their Operation
- Filling Propane Storage Containers
- Loading a Propane Transport
- Filling Bulk Delivery Vehicles
- Ship Unloading Procedure
- How to Control LPG Leak and Fires
- How to Handle LPG Fires with Portable Fire Extinguisher
- Propane Accident Response
- Emergency Response Guidelines
- Plant Emergency Procedures

This list of operating procedures to be developed is not consistent with actual SOPs. More specifically, SOPs available for review did not include:

- Emergency shutdown procedures
- Emergency operations procedures
- Procedures for startup following an emergency shutdown or turnaround
- Operating limits including consequences of deviations and steps required to avoid deviation
- Description of safety systems and their functions

SOPs are not reviewed and certified annually.

### **Training [40 CFR 68.71]**

Training documentation included “LPG Terminal – Manuals Training” performed on June 5 & 7, 2007. This documentation includes a list of the operating manuals for which the operators received training, including:

- CORCO LPG Terminal – Operating Manual; final approval March 2007
- CORCO LPG Terminal Emergency Response Manual
- CORCO LPG Hazardous Materials Security Plan
- CORCO LPG Terminal Fire Safety Analysis

All attending operators received a certificate as evidence of successful completion.

Additional HAZMAT training and training on Safe Work Permits was provided in October/November 2007.

### **Mechanical Integrity [40 CFR 68.73]**

The facility completed a “Maintenance Inspection Checklist and Tests for Propane Storage Facilities” in October 2006. The checklist included a review of:

- Construction code requirements
- Condition of containers and paint
- Foundations
- Container connections
- Tank fittings
- Gauges
- Pressure relief devices
- Emergency shutoff valves
- Presence of combustibles
- Pipes & Valves
- Transfer areas
- Pumps & Compressors
- Electrical equipment

This checklist was a good review of the integrity and condition of this equipment.

Mechanical integrity documentation also includes:

- LPG System – Preventive Maintenance Program Manual

Includes annual certifications of pressure vessels (propane spheres and bullets); last performed on 4/2/07.

- LPG Vessels Refurbishment Project Manuals (2)

Contains vessel thickness test reports for the propane spheres and bullets; includes inspection reports, hydrostatic test records, and certificates of compliance.

- LPG System – Inspection and Repairs Reports

Includes:

- Repair reports
- Radiographic inspection report
- Welders certification
- Equipment hydrostatic / pneumatic test reports

- Existing pipeline inspection reports

**Management of Change (MOC) [40 CFR 68.75] & Pre-Startup Review (PSR) [40 CFR 68.77]**

A written MOC procedure was available for review (MOC - #SFT-PSM-003-0103-00; effective 1/24/03) and a written Pre-startup Review procedure (OPN-LPG-002-1001-00; effective 10/31/01) was available for review.

The procedures addressed MOC/PSR requirements and include a form for MOC documentation and authorization and a PSR checklist. There were, however, no completed MOC/PSR reviews on file for review. The facility reported that a project to refurbish the propane storage spheres and bullets by replacing improperly sized pressure relief valves and updating instrumentation has been underway. This activity likely resulted in 'changes' to the storage tanks, however no MOC/PSR was on file for review, nor was there documentation to confirm that the refurbishing was 'replacement in kind.' Additionally, facility management reported that the material of construction of the fire water supply lines to the propane storage tanks has been changed from carbon steel to stainless steel. There is no MOC/PSR on file reviewing this change.

**Compliance Audits [40 CFR 68.79]**

There was no record of completed RMP compliance audits.

**Incident Investigation [40 CFR 68.81]**

CORCO does have a written procedure for conducting and documenting incident investigations. The procedure includes a form for incident investigation documentation.

Facility management stated that there have been no releases of propane in the past five-years.

**Employee Participation [40 CFR 68.83]**

There was no record of a written Employee Participation plan.

**Hot Work Permit [40 CFR 68.85]**

CORCO has a written Hot Work Permit program including a permit for controlling and managing hot work.



### **Contractor Safety [40 CFR 68.87]**

CORCO does have a written Contractor Safety Procedure (# SFT-PSM-001-0901-00; effective, 9/17/01) with procedures addressing the RMP requirements. Facility management reported that CORCO employs a ‘resident’ maintenance contractor for routine and regularly schedule work. Additionally, CORCO retains the services of outside contractors for tank integrity inspections. There were no records available for review confirming implementation of the contractor procedure for these contractors.

### **Emergency Response [40 CFR 68.90 – 68.95]**

The facility maintains a full-time in-house fire brigade to respond to LPG emergencies at the facility, with assistance from the local fire department and emergency services as necessary. The facility has a comprehensive emergency response plan, which is updated regularly, and provided training records and equipment inspection records for review.

## **FACILITY TOUR**

Several items noted during the facility tour include:

- ❑ One of the LEL detectors at loading dock #2 was out of calibration. **CORCO must ensure that the LEL detectors are properly calibrated per established schedule.**

## **FINDINGS/RECOMMENDATIONS**

### **Registration Information**

- ❑ CORCO’s RMP registration includes propane inventory listed as “LPG Marine Terminal” which lists 3,000,000-lbs. of propane inventory in an ocean-going vessel at the facility’s dock. Inventory in mobile containers should not be counted toward a facility’s inventory as long as the motive force is attached to the container (e.g., tank truck inventory is not counted toward a facility’s inventory as long as the tank truck remains attached to the truck cab). **The facility must verify whether propane inventory in an ocean-going vessel should be included on the RMP registration.**

### **Management System [40 CFR 68.15]**

- ❑ CORCO’s Senior Vice President has overall responsibility for implementation of the RMP program. CORCO’s Environmental Coordinator has day-to-day responsibility for implementation of the RMP program. The facility does not have an organization

chart depicting RMP responsibilities or a written description of its RMP management system. **The facility must develop an organization chart showing RMP management responsibilities or develop a written description of its RMP management system as required by 40 CFR 68.15(c).**

**Process Safety Information (PSI) [40 CFR 68.65]**

- ❑ **The facility must compile/develop piping and instrument diagrams (P&IDs) of the covered process as required by 40 CFR 68.65(d)(1)(ii).**
- ❑ As documented in a completed Process Safety Management checklist dated October 2006 (revised January 2007), five of the 20 storage bullets are not consistent with NFPA requirements for vessel relief capacities and tank instrumentation. The checklist notes that compliance with the NFPA requirements was scheduled for the third quarter of 2007. These action items remain incomplete. **As required by 40 CFR 68.65(d)(2), the facility must demonstrate that all 20 propane storage bullets comply with recognized and generally accepted good engineering practices.**
- ❑ Required PSI documents that were not available for review included:
  - ⇒ Electrical classification drawings / documentation
  - ⇒ Relief system design and design basis
  - ⇒ Documentation that existing equipment complies with recognized and generally accepted good engineering practices

**The facility must develop this required PSI, as required by 40 CFR 68.65(d)(1)(iii), (d)(1)(iv), and (d)(2).**

**Process Hazard Analysis (PHA) [40 CFR 68.67]**

- ❑ Several of the assigned due dates for resolving action items identified in the Propane Storage Facility – Hazard Review Checklist (revised October 2005) has passed. **As required by 40 CFR 68.67(e), the facility must establish a system to promptly address the PHA findings and recommendations and resolve them in a timely manner.**

**Standard Operating Procedures (SOPs) [40 CFR 68.69]**

- ❑ CORCO has several manuals each containing various written operating procedures. The facility has also developed a list of ‘to be developed’ operating procedures that is not consistent with actual written operating procedures. Additionally, some of the manuals contain conflicting or outdated procedures. **As required by 40 CFR 68.69, CORCO must develop written operating procedures to ensure the safe operation of covered equipment. CORCO should ensure that all necessary SOPs are developed and that conflicting written SOPs do not exist in the various manuals.**

- ❑ The written SOP for “Receiving Product from Dock” did not include a description of the existing LEL detectors nor describe the practice of operators wearing portable/personal LEL detectors (‘Passport’ detector). **As required by 40 CFR 68.69(a)(4), the SOP must include a description of these safety systems and their function.**
- ❑ While the written SOPs are dated, there is no documentation that they have been reviewed and certified annually. **CORCO must ensure that all written SOPs are reviewed and certified annually, as required by 40 CFR 68.69(c).**

**Management of Change (MOC) [40 CFR 68.75] & Pre-Startup Review (PSR) [40 CFR 68.77]**

- ❑ The facility reported that a project to refurbish the propane storage spheres and bullets by replacing improperly sized pressure relief valves and updating instrumentation has been underway. This activity likely resulted in ‘changes’ to the storage tanks, however no MOC/PSR was on file for review, nor was there documentation to confirm that the refurbishing was ‘replacement in kind.’ Additionally, facility management reported that the material of construction of the fire water supply lines to the propane storage tanks has been changed from carbon steel to stainless steel. There is no MOC/PSR on file reviewing this change. **CORCO must ensure that existing MOC/PSR procedures are being properly implemented for all process changes, as required by 40 CFR 68.75 (MOC) and 40 CFR 68.77 (PSR).**

**Compliance Audits [40 CFR 68.79]**

- ❑ There were no records of completed RMP compliance audits. **The facility must complete RMP compliance audits at least once every three years, as required by 40 CFR 68.79.**

**Employee Participation [40 CFR 68.83]**

- ❑ There was no record of a written Employee Participation plan. **CORCO must develop and implement an Employee Participation plan as required by 40 CFR 68.83.**

**Contractor Safety [40 CFR 68.87]**

- ❑ Facility management reported that CORCO employs a ‘resident’ maintenance contractor for routine and regularly scheduled work. Additionally, CORCO retains the services of outside contractors for tank integrity inspections. There were no records available for review confirming implementation of the contractor procedure for these contractors. **CORCO must implement the Contractor Safety procedure, as required by 40 CFR 68.87(b).**

